










Ward's Microscope Slides

Slide Stain Guide

What are you looking for/at?	Commonly used stain	Examples of what you see
General animal tissue	H & E (Hematoxylin & Eosin)	Blue nuclei (H) Pink cytoplasm and connective tissue (E) 
General plant tissue	Quadruple stain: Safranin O Fast Green Crystal Violet Orange G	Red nuclei, chromosome, lignified cell walls Green cellulose cell walls Purple starch grains Yellow acidophilic cytoplasm 
Dramatic cell and tissue features	Mallory triple	Blue cartilage and collagen Red nucleus Orange cytoplasmic elements 
Dramatic cell and tissue features	Masson	Green collagen and mucus Red nucleus Brown-Black chromatin 
Mitotic figures	Iron Hematoxylin	Black/Blue chromosomes cytoskeleton (tubulin), and mitochondria 
Fats and lipids	Osmium tetroxide or Sudan Black	Black lipid droplets, cell membranes, myelin 
Mucus/complex polysaccharides	PAS (Periodic Acid/Schiff) in goblet cells	Fuschia/Red secretory granules 
Neurofibrilis	Silver (multiple methods)	Black neuronal cytoskeleton 
Elastic connective tissue	Orcein or Verhoeff Containing fibers	Brown-Black elastin 

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Preparation and Slide Stain Guide

Stain	Structure/Color
a Azan	Nuclei, nucleoli, and erythrocytes – red; muscle – orange; gliafibrils – reddish; connective tissue – blue.
ab Azure B	DNA of chromatin – blue-green; RNA in nucleolus and cytoplasm – purple.
ac Aceto-Carmine	Chromosome banding – reddish brown.
af Acid-Fuchsin	Nuclei – red; mitochondria (plant) – red.
anti Anti-(protein)	Immunohistochemical labeling of specific protein – brown.
ao Aceto-Orcein	Chromosome banding – reddish brown.
b Bielschowsky silver method	Intracellular neurofibrils, axis cylinders, dendrites – black; collagenous connective tissue – purple.
bc Best's Carmine	Glycogen – red.
bi & fg Biebrich & Fast Green	Barr body in interphase cell – red.
c Carmine	Nuclei – red.
cv Cresyl Violet	Nissl substance – purple.
d Dyar	Cell walls – red; cytoplasm – blue.
daf DaFano silver method	Golgi substance – black.
ds Differential Spore	Spores – green/blue; vegetative bodies – red.
e Eosin	General cytoplasmic structure – various shades of red.
f Feulgen Reaction	Nuclei, DNA of chromatin – reddish violet.
fg Fast Green	Animal: Collagen and mucus – green. Plant: Cytoplasm and cellulose cell walls – green.
fs Fuchsin	Nuclei of plant and animal cells – red; bacteria – red.
g(+) Gram's	Positive reaction – cells violet.
g(-) Gram's	Negative reaction – cells red.
g(+/-) Gram's	Both color staining reactions evident.
gs Giemsa	Nuclei of leucocytes – reddish purple; rest of leucocytes – similar to Wright's stain; cytoplasmodia – blue; chromatin – red.
h Hematoxylin	Nuclear substances – deep blue.
h & e Hematoxylin & Eosin	General cytoplasmic structures – shades of pink; nuclear material – deep blue.
h & t Hematoxylin & Trisoin	Nuclear substances – deep blue; cytoplasmic structure – red or orange.
hae Hematoxylin, Azure II, Eosin	Cytoplasm of lymphocytes and blastocytes – blue; nuclei – deep blue; mast cell granules – violet to reddish purple.
ho Holmes silver method	Axis cylinders – blue to black; nerves and nerve endings – black; background – gray to rose.
hps Hematoxylin, Phloxine & Saffron	Nuclei – blue; cytoplasm, muscle, myelin – shades of red; connective tissue – yellow.
ih Iron Hematoxylin	Nuclear substances, chromosomes, mitochondria, centrioles, muscle striations – blue-black to black.
lfb Luxol Fast Blue	Myelin – blue-green.
m Manuel silver method	Reticulum – black.
mas Mason	Chromatin – brown-black; nuclei – red; zymogen granules – purple; cytoplasmic elements – red to mauve; collagen, mucus, and connective tissue – green.
mal Mallory triple	Nuclei – red; muscle and some cytoplasmic elements – red to orange; collagen – dark blue; connective tissue and hyaline substance – blue; dense cellular tissue – pink.
mb Methylene Blue	Nuclear structure, Nissl substance – blue.
mc Mucicarmine	Mucin – red.

Stain	Structure/Color
mgp Methyl Green and Pyronine	DNA – blue; RNA – red.
n Nigrosin	Negative background stain.
nfr Nuclear Fast Red	Nuclei – red.
o Orcein	Elastin – dark brown.
og Orange-G	Animal: Connective tissue – orange. Plant: Acidophilic cytoplasm and cell walls – orange.
ost & h Osmium Tetroxide & Hematoxylin	Lipids, fats – black; nuclear material – deep blue.
p Phloxine	Collagen and other non-nuclear tissue elements – bright rose.
pt Phloxine/Tartrazine	Inclusion bodies – red; nuclei – blue; background – yellow.
pb Prussian Blue	Hemosiderin – blue or green.
pas Periodic Acid Schiff Reaction	Nuclei and other tissue elements – color of counter stain. Glycogen, starch, cellulose – red.
qs Quadruple	Plant tissue: Safranin O stains nuclei, chromosomes, lignified and cutinized cell walls red. Fast Green stains cytoplasm and cellulose cell walls green. Crystal Violet stains starch grains purple. Orange G stains acidophilic cytoplasm and cell walls yellow to green.
rs Robinow's	Nuclear matter – pink; cytoplasm – blue.
s Saffron	Connective tissue – yellow.
sb Sudan Black	Fat bodies – black; cell walls – pink.
so Safranin O	Nuclei, chromosomes, lignified and cutinized cell walls – red.
si Silver impreg. (Cajal, Golgi)	Neurons – yellow to black; neurofibrils, axis cylinders – brown to black; neuroglia – black.
sls Silver Line System	Shows Kinety lines.
sr Sudan Red	Fat tissue – red.
t Trisoin	General cytoplasmic structure – red or orange.
tb Trypan Blue	Vital dye engulfed by phagocytotic cells – blue.
tib Toluidine Blue	Mucin – reddish violet.
v Verhoeff	Elastic fibers – blue to black; nuclei – blue to brownish-black.
w Woelke's Myelin Sheath	Myelin sheath – blue; background – clear; glial cells, nucleoli of neurons – black.
wr Wright's	Erythrocytes – yellowish red. Polymorpho- nuclears: nuclei – dark purple; granules – reddish lilac; cytoplasm – pale pink. Eosino-philic: nuclei – blue; granules – orange-red; cytoplasm – blue.
Basophiles:	nucleus – purple to dark blue; granules – dark blue. Lymphocytes: nuclei – dark purple; cytoplasm – blue. Platelets: granules – violet to purple.

Key to Mount Preparation Technique

(WM)	=	Wholemout
(SM)	=	Smear
(SECT)	=	Section
(CS)	=	Cross Section
(TLS)	=	Tangential – Longitudinal Section
(RLS)	=	Radial – Longitudinal Section
(LS)	=	Longitudinal Section
(MLS)	=	Median – Longitudinal Section
(SQ)	=	Squash
(VS)	=	Vertical Section